Section II: Remarks

The pending claims are claims 1-14.

Rejection of Claims and Transversal Thereof

In the March 3, 2010 Office Action:

claims 1-11 and 13-15 were rejected under 35 U.S.C. §103(a) as being unpatentable over Nguyen (U.S. Patent No. 6,177,182) in view of Bennett et al. (PCT Publication No. WO 02/11984); and

claim 12 was rejected under 35 U.S.C. §103(a) as being unpatentable over Nguyen in view of Bennett et al. and in further view of Tao et al. (U.S. Patent No. 6,939,663).

These rejections are respectfully traversed. The patentable distinctions of the pending claims over the cited references are set out in the ensuing discussion.

Request for Continued Examination

A Request for Continued Examination under 37 CFR §1.114 is included herewith.

Rejections under 35 U.S.C. §103(a)

1. In the March 3, 2010 Office Action, claims 1-11 and 13-15 were rejected under 35 U.S.C. §103(a) as being unpatentable over Nguyen (U.S. Patent Application No. 6,177,182) (hereinafter Nguyen) in view of Bennett (PCT Publication No. WO 02/11984) (hereinafter Bennett). Applicants traverse such rejection.

Nguyen discloses a method of synthesis of near infrared sensitive polymers and their use in various applications such as achieving long-life printing plates while avoiding phase separation of the ingredients in the coating formulation. As admitted by the Office, "Nguyen does not disclose the infrared chromophoric moiety is an indole cyanine dye combined with a benz[e]-indole cyanine dye" (see, the June 23, 2009 Office Action, page 3, lines 3-4).

Applicants continue to maintain that Bennett does not cure the deficiencies of Nguyen.

Bennett relates to a coating comprising a composition including a hydroxyl group-containing polymer. Optional components in the Bennett composition include modifying means and additional radiation absorbing compounds. Each will be discussed individually hereinbelow.

Modifying Means

Importantly, with regards to the modifying means, Bennett recites at page 5, lines 24-29:

> A preferred composition includes a modifying means effective to alter the dissolution rate of the composition in a developer, in unheated regions, in heated regions, or both in comparison with a corresponding composition not having such modifying means. The modifying means may be covalently bonded to the hydroxyl group-containing polymer. Alternatively it may be a compound which is not covalently bonded to the hydroxyl group-containing polymer.

(emphasis added)

In other words, the modifying means alter the dissolution rate of the composition in the developer. Specifically. the modifying means function by enhancing the dissolution of the polymer in the presence of heat (see, e.g., Bennett, page 6, lines 1-5) or making the polymer more resistant to dissolution in unheated regions (see, e.g., Bennett, page 16, lines 20-21).

Importantly, the only compounds that are disclosed in Bennett as being able to be covalently bonded to the hydroxyl group-containing polymer are the modifying means comprising functional groups Q, wherein Q is defined as including -O-SO_2-tolyl, -O-dansyl, -O-SO_2-thienyl, or -O-SO_2-naphthyl and -O-CO-Ph (see, e.g., Bennett, page 7, line 28 through page 8, line 16) or the modifying means comprising diazide moieties (see, e.g., Bennett, page 8, line 20 through page 9, line 3).

Radiation Absorbing Compound

As recited in Bennett at page 14, lines 12-22, the heat that is necessary for the modifying means to dissolve the polymer can be delivered by:

> - Direct heat, by which we mean the direct delivery of heat by a heated body, by conduction. For example the coating may be contacted by a heat stylus; or the reverse face of the substrate onto which the coating has been applied may be contacted by a heated body. A heated body may be a heat stylus.
>
> - The use of incident electromagnetic radiation to expose the coating, the electromagnetic radiation being converted to heat. The electromagnetic radiation could for example be infra-red, or UV or visible radiation, depending on the composition. Preferably it is infra-red.
>
> - The use of charged-particle radiation, for example electron beam radiation. Clearly, at the fundamental level the charged-particle mode and the electromagnetic mode are convergent; but the distinction is clear at the practical level.

In order to use electromagnetic radiation to heat the coatings, a radiation absorbing compound capable of absorbing the incident electromagnetic radiation (and charged particle radiation) and converting it to heat can be added to the composition (see, Bennett, page 14, lines 23-28). The radiation absorbing compounds are either present in a separate layer (see, Bennett, page 15, lines 16-17) or admixed in the composition (see, Bennett, page 15, lines 24-25). Preferably, the radiation absorbing compound is an organic pigment or dye (see, Bennett, page 15, lines 29-30). With regards to pigments and dyes, Bennett recites at page 16, lines 9-23:

> <u>Pigments are generally insoluble in the compositions</u> and so comprise particles therein (unless provided as a separate layer of a coating). Generally they are broad band absorbers, preferably able efficiently to absorb electromagnetic radiation and convert it to heat over a range of wavelengths exceeding 200 nm, preferably exceeding 400 nm. Generally they are not decomposed by the radiation. Generally they have no or insignificant effect on the solubility of the unheated coating, in the developer. In contrast <u>dyes are generally dissolved in the compositions</u> (unless provided as a separate layer of a coating). Generally they are narrow band absorbers, typically able efficiently to absorb electromagnetic radiation and convert it to heat only over a range of wavelengths typically not exceeding 100 nm, and so have to be selected having regard to the wavelength of the radiation which is to be used for imaging.

(emphasis added)

In other words, <u>the dyes</u>, when present, <u>are dissolved in the composition</u>. <u>No covalent bonding of the dyes to the hydroxyl group-containing polymer will occur</u>.

According to the Office:

> "Bennett et al. disclose a near infrared absorption polymer (abstract and page 15, lines 1-31) comprising more than cyanine dyes (infra-red radiation absorbing compounds, page 17, lines 1 – page 18, line 5) that are covalently bonded to the polymer (page 9, lines 2-3). (see, the March 3, 2010 Office Action, page 3, lines 4-7)

Applicants vigorously disagree.

The Office is respectfully reminded that prior art references must be considered as a whole. *W.L. Gore & Associates, Inc., v. Garlock, Inc.*, 220 U.S.P.Q. 303 (Fed. Cir. 1993), *cert. denied*, 469 U.S. 851 (1984).

Bennett discloses radiation absorption compounds at page 15, lines 1-31 and page 17, line 1 through page 18, line 5, however, the radiation absorption compounds are pigments or dyes which are insoluble in or dissolved in the composition, respectively (see, Bennett, page 16, lines 9-23). The teaching disclosed at page 9, lines 2-3 of Bennett, as cited by the Office, relates to the covalent bonding of diazide moiety modifying means and optionally compounds including the functional groups Q which are introduced modifying means as well. To reiterate, when considered as a whole as the Office must do, the only teaching in Bennett regarding the covalent bonding of moieties to the hydroxyl group-containing polymer involves the modifying means, NOT the radiation absorbing compounds.

In the ***Response to Arguments***, the Office recited:

> "Bennett is only added to teach an infrared chromophoric moiety can be covalently bonded to a polymer." (see, the March 3, 2010 Office Action, page 6, lines 8-9)

As introduced hereinabove, the radiation absorbing compounds are either in a separate layer (see, Bennett, page 15, lines 16-17) or admixed (see, Bennett, page 15, lines 24-25) in the composition. There is no teaching in Bennett that the radiation absorbing compounds are covalently bonded to the polymer.

Further, the Office introduced a passage from Bennett, which recites:

> Many dyes have a marked effect on the dissolution rate of the unheated coating in the developer, typically making it much more developer resistant. Thus a dye may be employed as a radiation absorbing compound and as a modifying means, in certain coatings of the invention.
>
> (see, the March 3, 2010 Office Action, page 6, lines 16-19) (emphasis added)

As expressly recited in this reproduced passage, the compound that may be used as a radiation absorbing compound and as a modifying means is a **dye**. As recited in Bennett, dyes are generally

dissolved in the composition (see, Bennett, page 16, lines 15-16) or are present in a separate layer as the radiation absorbing compound (see, Bennett, page 14, lines 16-17).

Further, the Office recited:

> "The examiner notes the cyanine dyes of Bennett can function as an absorber compound and/or a reversible insoluble compound. Therefore, examiner notes when the cyanine dye function as a reversible insolubilizer compound it can be covalently bonded to the hydroxyl group-containing polymer as claimed by claim 1 of the instant application." (see, the March 3, 2010 Office Action, page 7, lines 4-8) (emphasis added)

Applicants vigorously disagree.

Again, the Office is respectfully reminded that prior art must be considered as a whole. Further, the Office is not permitted to insert teachings into the prior art reference that are not there. Ostensibly, the Office is implying that a transitive property exists (i.e., if a=b and b=c, then a=c). Just because some of the Bennett dyes can act as reversible insolubilizer compounds (i.e., modifying means), and some reversible insolubilizer compounds (i.e., modifying means) can be covalently bonded to the polymer, does not mean that Bennett discloses that the dyes can be covalently bonded to the polymer. Instead, as discussed in the foregoing point, Bennett discloses that the dyes are generally dissolved in the composition (see, Bennett, page 16, lines 15-16) or are present in a separate layer as the radiation absorbing compound (see, Bennett, page 14, lines 16-17).

The insolubility of the cyanine dyes in the Bennett composition is further supported by the teaching in Bennett at page 6, lines 1-26, which recites, *inter alia*:

> The modifying means may comprise a compound which is not covalently bonded to the polymer but which acts to inhibit the dissolution in an aqueous developer of the coating; such inhibition being reduced or entirely removed by the action of heat. Such a compound is hereinafter referred to as a "reversible insolubiliser compound".

* * *

> Most preferably the reversible insolubiliser compound is a quaternized heterocyclic compound. Examples of suitable quaternized heterocyclic compounds are imidazoline compounds, such as Monazoline C, Monazoline O, Monazoline CY and Monazoline T all of which are manufactured by Mona Industries, quinolinium compounds, such 1-ethyl-2-methyl quinolinium iodide and 1-ethyl-4-methyl quinolinium iodide, and benzothiazolium compounds, such as 3-ethyl-2-methyl benzothiazolium iodide, and pyridinium compounds, such as cetyl pyridinium bromide, ethyl viologen dibromide and fluoropyridinium tetrafluoroborate.
>
> Usefully the quinolinium or benzothiazolium compounds are cationic cyanine dyes, such as Quinoldine Blue and 3-ethyl-2-[3-(3-ethyl-2(3H)-benzothiazolylidene)-2-methyl-1-propenyl] benzothiazolium iodide .... (emphasis added)

Firstly, the phrase "reversible insolubilizer compound" is defined in Bennett as corresponding to the modifying means which are **not** covalently bonded to the polymer.[1] Secondly, according to Bennett, the reversible insolubilizer compounds are either in a separate layer or admixed in the composition (see, Bennett, page 7, lines 16-19).

Moreover, it is known to those skilled in the art that some dyes can act as reversible insolubilizer compounds when admixed in a coating comprising a polymer containing hydroxyl groups. It is also known that this effect is due to the formation of hydrogen bonds between the two components during the coating-drying process (loss of solvent): during this process the unbound monomeric dye molecule is mobile and therefore free to form hydrogen bonds (which are not the same as covalent bonds) with the polymer. However, this freedom of movement is not available in the claimed invention, since the chromophoric moieties are already covalently bonded to the backbone of the alkali-soluble resin when the coating takes place (see, the instant specification, page 7, lines 5-8). Indeed, the present invention makes clear that the technical effect provided by the covalently bound chromophores is due to improved stabilization by steric hindrance (see, the instant specification, page 7, lines 25-29) and not a possible hydrogen bonding or complex formation as disclosed by Bennett (see, Bennett, page 10, lines 8-9). Consequently, the mechanisms of insolubilization are totally different.

Considered *in toto*, Bennett does not cure the deficiencies of Nguyen. Bennett discloses that radiation absorbing compounds can be included in the composition, however, said radiation absorbing compounds are either admixed in the composition or present in a separate layer.

As noted by the instant application, the use of an soluble polymer having two specific distinct chromophores attached directly to the polymer backbone gives an unexpected and significant

[1] When the diazide moieties or the functional groups Q are covalently bonded to the polymer they are said to have "reversible insolubilization effect[s]." (see, page 7, line 28 through page 9, line 3). They are not "reversible insolubilizer compounds" as defined at page 6, lines 1-5.

improvement in the thermal stabilization time of the precursor. However, one skilled in the art considering Nguyen in view of Bennett would never recognize this advantage.

Accordingly, it is submitted that claim 1 is not obvious in view of the cited prior art nor claims 2-11 and 13-14, which depend directly or indirectly on claim 1. Therefore, applicants respectfully request reconsideration and withdrawal of the obviousness rejection.

2. In the March 3, 2010 Office Action, claim 12 was rejected under 35 U.S.C. §103(a) as being unpatentable over Nguyen in view Bennett and in further view of Tao et al. (U.S. Patent No. 6,939,663) (hereinafter Tao). Applicants traverse such rejection.

As introduced hereinabove, the disclosure of Nguyen in view of Bennett does not suggest the near infrared absorption polymer defined by the claimed invention. Tao does not cure these deficiencies. Specifically, Tao does not motivate, teach or suggest a near infrared absorption polymer comprising at least two different pendent infra-red chromophoric moieties covalently bonded to the backbone of an alkali-soluble resin, wherein at least one of the pendent infra-red chromophoric moieties is an indole cyanine dye and the other of which is a benz[e]-indole cyanine dye. In fact, Tao is solely concerned with water soluble novolaks and their use in <u>negative</u> working and <u>on-press developable</u> plate precursors (therefore no alkaline development needed). Thus, the plate precursors of Tao are of a totally different technology to either Bennett or the present application.

Accordingly, there is no reason for one skilled in the art considering the three cited references to go in the direction of applicants' invention and as such, claim 12 is not obvious in view of the same. Withdrawal of the obviousness rejection of claim 12 is respectfully requested.

<u>Petition for Extension of Time/Fees Payable</u>

Applicants hereby petition for a three (3) month extension of time, extending the deadline for responding to the March 3, 2010 Office Action from June 3, 2010 to September 3, 2010. The fee of $555.00 specified in 37 CFR §1.17(a)(2) for such three (3) month extension is hereby enclosed.

Applicants also hereby enclose $405.00 for the Request for Continued Examination (RCE).

The total fee of $960.00 is being paid by Electronic Funds Transfer. Authorization is hereby given to charge any deficiency in applicable fees for this response to Deposit Account No. 13-4365 of Moore & Van Allen PLLC.

Conclusion

Based on the foregoing, claims 1-14 are in form and condition for allowance. If any additional issues remain, the Office is requested to contact the undersigned attorney at (919) 286-8000 to discuss same.

Respectfully submitted,

MOORE & VAN ALLEN PLLC

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By: ___________________________

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